Foreign Animal Disease Report

United States Department of Agriculture
Animal and Plant Health Inspection Service
Veterinary Services

Emergency Programs

Number 22-4

Spring 1995

This Issue

Emergency Programs Activities

Field Investigations. During the first and second quarters of fiscal year 1995 (October 1, 1994–March 31, 1995), veterinary medical officers from the U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA, APHIS, VS), and State departments of agriculture conducted 124 investigations of suspicious foreign animal diseases in the United States to eliminate the possibility that an exotic disease may have been introduced. These investigations included 49 (40 percent) for vesicular disease conditions, 17 (14 percent) for bovine spongiform encephalopathy surveillance, 12 (10 percent) for avian diseases in pet birds and poultry, 10 (8 percent) for encephalitic disease, 9 (7 percent) for mucosal disease, 8 (6 percent) for hemorrhagic septicemia, 7 (6 percent) for spontaneous abortion, and 4 (3 percent) for other miscellaneous disease conditions, 3 (2 percent) for pox/lumpy skin disease, 3 (2 percent) for excessive/acute death, 1 (1 percent) for respiratory disease, and 1 (1 percent) for myiasis/acariasis.

There were 25 investigations conducted in VS' Northern Region, 36 in the Southeastern Region, 6 in the Central Region, and 57 in the Western Region. All investigations were negative for foreign animal diseases or pests.

Foreign Animal Disease Update

This update consolidates into tables information from Office International des Epizooties (OIE) bulletins issued July through September 1994. Countries reporting disease outbreaks are listed below the appropriate disease heading (followed by the month/year of the report and total number of outbreaks reported for that time period). The notation "+" indicates that the presence of disease was reported without information on total number of outbreaks. Outbreak number followed by "+" indicates number of outbreaks as well as the presence of disease.

Foot-and-Mouth Disease

Virus Untyped
Bhutan (6/94) 32
Brazil (3&4/94) 673
Chad (1–5/94) 14+
India (4–6/94) 462*
Laos (1–3/94) +
Myanmar (6–8/94) 7
Niger (1/94) 7
Nigeria (8/94) 1
Oman (5&6/94) 92
Thailand (6–8/94) 3
Togo (7/94) 2

* Incomplete total.

Virus O
Brazil (3–7/94) 144
Colombia (5–8/94) 101
Ecuador (2&3/94) 2
Ghana (3–6/94) 16
Greece (7–9/94) 168
India (4/94) +
Israel (7/94) 1
Israel (Controlled Territories) (7/94) 1
Jordan (3/94) 1
Kuwait (8/94) +
Malaysia (peninsula) (8/94) +
Oman (4,7&8/94) 81
Saudi Arabia (6&7/94) +
Sri Lanka (6/94) 1
Thailand (6–8/94) 7
Tunisia (6/94) 1
Turkey (5–8/94) 20
United Arab Emirates (2/94) 1

Virus A
Brazil (3&4/94) 44
Colombia (5,6&8/94) 5
India (4/94) +
Kenya (8/94) 1

Virus C
Brazil (3&4/94) 7
India (4/94) +

Virus SAT 2
Kenya (8&9/94) 2

Virus Asia 1
Cambodia (7/94) +
India (4/94) +
Laos (1–3/94) +
Malaysia (peninsula) (9/94) 3
Oman (4/94) 2
Thailand (8/94) 2
Vietnam (2/94) 1

Vesicular Stomatitis

Virus Indiana
Colombia (5–8/94) 14
El Salvador (5–7/94) 9

Virus New Jersey
Colombia (5–8/94) 28
Costa Rica (5&7/94) 2
El Salvador (5–7/94) 63
Honduras (6&7/94) 12
Mexico (6–8/94) 24
Nicaragua (5/94) 1
Panama (8/94) 1

African Swine Fever

Italy (7&9/94) 2
Kenya (7&8/94) 3
Senegal (4–8/94) +
South Africa (9/94) 1
Spain (8&9/94) 2

Newcastle Disease

Virus Not Characterized
Argentina (7/94) +
Brazil (4/94) 7
Cambodia (1–3/94) +
Chad (1–5/94) +
China (People's Republic) (4–6/94) 46
Ghana (3–6/94) 24
Guinea (6–9/94) +
India (4–6/94) 203*
Italy (7/94) 36
Jordan (2–8/94) +
Laos (1–3/94) +
Madagascar (4/94) 3
Myanmar (6/94) 3
Philippines (5&6/94) +
RFY (Serbia & Mont.) (7/94) 1
Senegal (4–8/94) +
South Africa (7–9/94) +
Swaziland (6/94) 3
Syria (4/94) 6
United Arab Emirates (1&6/94) 2
Vietnam (1–6/94) +

* Incomplete total.

Velogenic Virus
Botswana (6&7/94) +
Comoros (1–6/94) +
Germany (6–8/94) 85
Indonesia (1–6/94) +
Kenya (6&9/94) 8
Netherlands (5&8/94) 3
Singapore (8/94) 1
South Africa (7–9/94) 65
Sri Lanka (6–8/94) 72
Sudan (7/94) 3
Tunisia (6&7/94) 10
Zimbabwe (8/94) 7

Fowl Plague

Comoros (1–6/94) +
Laos (1–3/94) +

Rinderpest

India (4–6/94) 63
Pakistan (8&9/94) 18

Bluetongue

Israel (8/94) 3
South Africa (7/94) 6
United States (7&8/94) +

Hog Cholera
Argentina (7/94) 1
Austria (9/94) 1
Belgium (7/94) 1
Brazil (3&4/94) 56
Bulgaria (9/94) 2
Cambodia (1–3/94) +
Chile (7–9/94) 4
China (People's Republic) (4–6/94) 48
Colombia (5&6/94) 3
Cuba (1–8/94) 19+
Germany (6–8/94) 36
India (4&5/94) 7*
Italy (7&9/94) 2
Korea (Republic) (6–8/94) 10
Laos (1–3/94) +
Malaysia (peninsula) (8/94) 1
Mexico (8/94) 1
Philippines (4–6/94) +
Poland (7–9/94) 4
Russia (5&6/94) 4
Slovak Republic (5–8/94) 16
Sri Lanka (6/94) 1
Thailand (7&8/94) 2
Vietnam (1–6/94) 73+

* Incomplete total.

Sheep and Goat Pox
Algeria (7–9/94) 463
China (People's Republic) (4–6/94) 6
India (4–6/94) 20
Jordan (4/94) 1
Morocco (8&9/94) 32
Niger (1–7/94) 23
Oman (4–8/94) 38
Senegal (4–7/94) 5
Sri Lanka (8/94) 1
Syria (4/94) 9
Tunisia (6&7/94) 24
Turkey (5–8/94) 4
United Arab Emirates (3&4/94) 2

Peste des Petits Ruminants
Ghana (4&5/94) 16
Guinea (6–9/94) +
Israel (Controlled Territories) (7/94) 1
Jordan (2,3&8/94) 3
Nigeria (4–7/94) 20
Oman (4–8/94) 109
Senegal (4–8/94) 4+
United Arab Emirates (7/94) 1

Contagious Bovine Pleuropneumonia
Angola (4,6&7/94) 1+
Ghana (5/94) 1
Guinea (7–9/94) +
Kenya (7/94) 4
Niger (5&6/94) 5
Nigeria (4&8/94) 2
Togo (7/94) 2

Lumpy Skin Disease
Angola (2,4,6&7/94) 3+
Botswana (6&7/94) +
Comoros (1–6/94) +
Madagascar (4/94) 9
South Africa (7–9/94) 39
Swaziland (6/94) +
Zimbabwe (7–9/94) 11

African Horse Sickness
Senegal (4–8/94) +

(Dr. William White, International Services, APHIS, USDA, Riverdale, MD 20737, 301–734–8892)

245

Bovine Spongiform Encephalopathy Update

Surveillance of Domestic Animals in the United States. From the onset of the Bovine Spongiform Encephalopathy (BSE) Surveillance Program in May 1990 through April 1, 1995, 2,158 brain specimens were submitted for examination to the USDA, APHIS, VS, National Veterinary Services Laboratories (NVSL), and other laboratories. All of the samples were negative for histopathologic evidence of BSE.

Surveillance of Cattle Imported From the United Kingdom. As of April 21, 1995, of the 499 cattle imported into the United States from the United Kingdom between 1981 and July 1989, 133 animals are known to be alive, 322 animals are known to be dead, 8 animals have been exported, and tracebacks are ongoing for 36 animals.

The 36 animals of unknown status will continue to be investigated; however, tracebacks on these animals have been difficult due to previous dispersal sales resulting in lost records and/or lack of animal registration with the breed associations. VS estimates that, based on their ages, only 9 of the 36 cattle of unknown status are still alive. In addition, only one animal (8 years old) of unknown status is in the age category of highest risk for BSE (between 5 and 8 years old). The remaining 35 animals of unknown status range in age from 11 to 20 years, thus reducing their likelihood of survival as well as their likelihood of developing BSE.

BSE Issues Management Team. A BSE Issues Management Team was created in December 1994 to evaluate current information on BSE and potential impacts on human and animal health. The team will actively analyze and manage risks of BSE for the United States, disseminate accurate information about the disease, and act as a reference source for responding to questions about BSE.

BSE Factsheet. An updated BSE factsheet, dated January 1995, is available online through the APHIS gopher on the Internet (a gopher is an information retrieval service on the Internet). To access the factsheet within your gopher software, enter GOPHER.APHIS.USDA.GOV. Then follow this pathway: APHIS Information, Animal Health Information, Cattle Health, Bovine Spongiform Encephalopathy. The URL address on the World Wide Web is gopher://gopher.aphis.usda.gov.

(Dr. Sara Kaman, Emergency Programs, VS, APHIS, USDA, Riverdale, MD 20737, 301–734–8073)

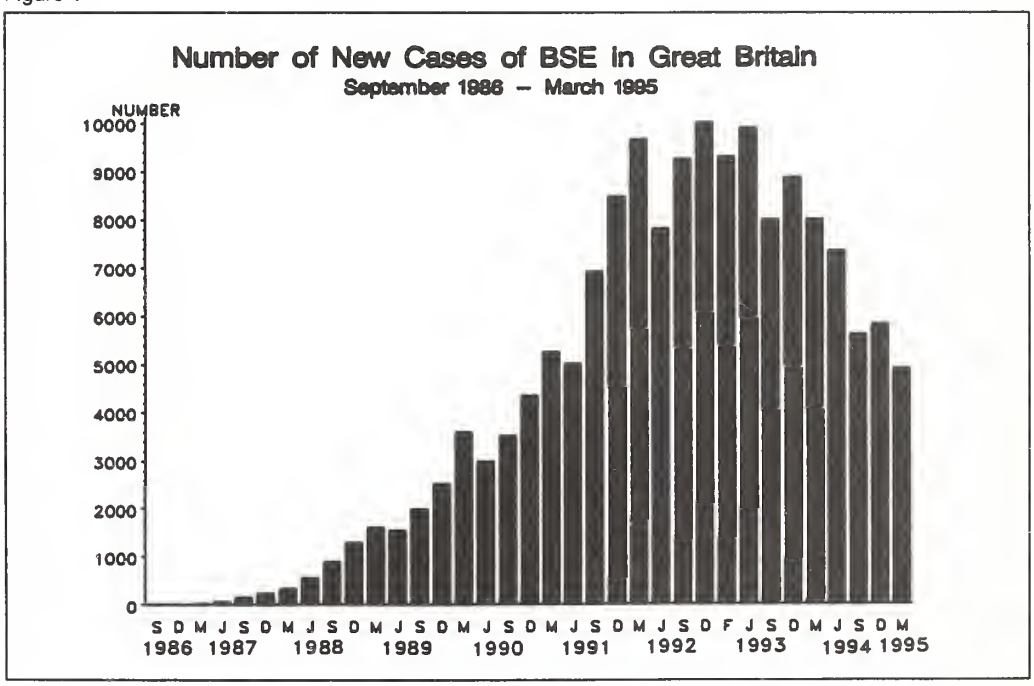
In Europe. Great Britain reported 4,892 newly confirmed cases of BSE, with 441 more herds affected between December 3, 1994, and March 3, 1995, a decrease from the previous 3-month period (table 1). Review of the epidemic curve (figure 1) reveals a return to the downward curve, indicating that the epidemic continues to decline.

Table 1—Descriptive epidemiologic statistics for BSE in Great Britain* as of March 3, 1995

Total number of confirmed cases	144,901
Total number of affected herds	31,122
Percentage of dairy herds affected	53
Percentage of beef suckler herds affected	14.5

* England, Scotland, and Wales. Data provided by Great Britain.

Figure 1



Between September 30, 1994, and April 7, 1995, the Republic of Ireland reported five additional cases of BSE in native cattle. Between December 20, 1994, and April 7, 1995, Portugal reported two additional native cases, and France reported two additional native cases between September 1, 1994, and April 7, 1995. Switzerland reported 16 additional native cases between November 2, 1994, and March 24, 1995, and Northern Ireland reported 144 additional native cases between December 1, 1994, and March 6, 1995 (table 2). No new countries reported cases of BSE imported from the United Kingdom or other countries with endemic BSE.

Table 2—BSE cases[1] worldwide other than Great Britain as of April 7, 1995

Country[2]	1987 +before	1988	1989	1990	1991	1992	1993	1994	1995	Total
Guernsey	4	34	52	83	75	92	115	69	—	524
Northern Ireland	0	3	30	100	170	333	487	363	43	[3]1,529
Jersey	0	1	4	8	14	23	37	22	—	109
Isle of Man	0	8	6	22	67	109	110	55	—	375
Republic of Ireland	0	0	15	14	17	18	16	19	—	99
Switzerland	0	0	0	2	8	15	29	64	19	[3]137
Portugal	0	0	0	[4]1	[4]1	[4]1	[4]3	12	1	19
France	0	0	0	0	5	0	1	4	1	11

[1] Cases in native cattle and cattle imported from the U.K. or another country with endemic BSE.
[2] In order of first reported case/diagnosis.
[3] Data for Northern Ireland as of March 6, 1995; data for Switzerland as of March 24,1995.
[4] Imported cases.

Data provided by OIE and Northern Ireland.

Those countries with imported cases of BSE include only:
Germany: 4 cases (2/92, 2/94, 4/94, 5/94)
Canada: 1 case (1/93)
Denmark: 1 case (7/92)
Falkland Islands: 1 case (1989)
Italy: 2 cases (10/94)
Oman: 2 cases (1989)

[Source: Dx Monitor, Animal Health Report, Spring 1995, VS, APHIS, USDA, 555 South Howes, Suite 200, Fort Collins, CO 80521]

245

Recent Observations on the Epidemiology of Bovine Spongiform Encephalopathy

BSE became a statutorily notifiable disease in Great Britain in June 1988, following its recognition in 1986 and subsequent initial epidemiologic studies. In July 1988, Great Britain banned the feeding of ruminant-derived protein to ruminants. Since that time, animal health officials have closely monitored the epidemic. Analyses and specific studies have enabled animal health officials to gain as full an understanding as possible of the epidemiology of BSE and to determine whether the attempts to prevent further exposure from the feedborne source are achieving the expected effects.

These continued studies have provided substantiating evidence for the original hypothesis that meat and bonemeal containing a scrapie-like agent was the vehicle of infection for cattle. A major finding during the course of the epidemic was that, since

the middle of 1989, the majority of clinical cases have resulted from the recycling of infected cattle tissues via meat and bonemeal. This process continued until the feeding of ruminant-derived protein to ruminants was prohibited by statute in July 1988.

The first expected effect of this intervention was a reduction in the incidence of BSE in 2-year-old animals. This reduction occurred in 1991. Since then, further evidence has accumulated, most notably a reduction in incidence in 4- and 5-year-old animals during 1993 and 1994. As these represent the model ages for clinical onset, a reduction in the number of cases in these age classes produced a reduction in the national incidence, with the epidemic peaking at the end of 1992 and beginning of 1993. The peak annual incidence did not exceed 1 percent of adult cattle in Great Britain. This reduction in incidence has been sustained: the number of suspect cases being reported each week is currently approximately 40 percent of that reported at the peak of the epidemic.

In recent years, the epidemiologic research on BSE has concentrated on analyses and studies to examine for evidence of any means of transmission other than from the feedborne source. The results of routine analyses of data obtained from the monitoring of the epidemic have not so far provided any such evidence. The within-herd incidence in affected herds has remained low and has decreased coincidentally with the animal incidence. Also, the incidence of BSE in the offspring of affected cows has not been greater than that expected from the feedborne source, indicating that maternal transmission is unlikely to occur at a significant rate.

The cohort study initiated in 1989–90 to examine, in the most appropriate manner, the question of maternal transmission is still in progress, so no definitive results are available. However, a within-herd case-control study of animals born on or after November 1, 1988, was conducted during 1994. The results provide no evidence that the offspring of animals that are subsequently affected with BSE are at increased risk of developing disease. A marginal but statistically significant risk was found for animals born on the day, or between 1 and 3 days after, a subsequently affected animal calved, but this finding is unlikely to be indicative of a causal association. Even adjusting for the exposure to infected animals that calved but would be culled from the herd before developing clinical signs of BSE, these routes of transmission could not account for the majority of cases born after the introduction of the legislation.

The incidence of BSE in animals born after this ban is at a much-reduced rate compared with that in previously born cohorts. The most likely explanation for the occurrence of infected animals born after the ban is that there was a continued feedborne exposure because of accidental cross-contamination of commercial feedstuffs in mills producing both ruminant and monogastric rations. This possible explanation is being investigated primarily by a between-herd case-control study.

In summary, the evidence indicates that the ban on the feeding of ruminant-derived protein to ruminants was effective in reducing the risk of infection from this source. A risk clearly continued, albeit much reduced, as a result of feedstuffs manufactured before the ban that were in the food supply chain or on farms. These food supplies would obviously be exhausted with the passage of time, but a very low risk persisted because of unintentional cross-contamination. This phenomenon is consistent with the hypothesis that the occurrence of BSE is associated with a low-dose exposure, a

theory that is the subject of further study. However, the results of epidemiologic studies to date indicate that methods of transmission other than the feedborne source are not of significance in maintaining the epidemic.

(Dr. John W. Wilesmith, M.D., Epidemiology Department; Ministry of Agriculture, Fisheries and Food; Central Veterinary Laboratory; Weybridge, Surrey, United Kingdom)

245

Highly Pathogenic Avian Influenza in Mexico

Background. Clinical signs suggestive of avian influenza (AI) were first noted in Mexico in October 1993. Affected birds were submitted to a diagnostic laboratory in Mexico, but the etiologic agent was not fully characterized at that time. Although there were reports of increased morbidity and mortality in several flocks in Mexico at the time, the virus was assumed to be a nonpathogenic strain of AI.

In May 1994, a virus was isolated that was forwarded to NVSL for further characterization. NVSL identified the virus as an H5N2 AI serotype. Subsequent sequencing supported the observation that this was a nonpathogenic strain.

Also at that time, the Mexican Government began conducting a serologic survey of flocks in an effort to determine the extent of the viral infection. Mexican poultry companies were asked to submit sera to diagnostic laboratories for testing. The results of the survey indicated that poultry in the 11 central States of Mexico had been infected with the virus, while the southern and northern border States were free of the agent.

In December 1994 and January 1995, flock owners in the States of Puebla (approximately 150 miles southeast of Mexico City) and Queretaro (approximately 100 miles north of Mexico City) reported increased morbidity and mortality and severely decreased egg production in their flocks. AI virus was isolated from these flocks and forwarded to NVSL for characterization. Chickens inoculated with the Queretaro strain of the virus showed clinical illness within 20 hours, and gross necropsy findings in these birds indicated a highly pathogenic strain of AI.

On January 20, 1995, the Mexican Government officially notified OIE that highly pathogenic AI (HPAI), serotype H5N2, had been recovered from poultry in Mexico. On January 23, 1995, an emergency task force was activated in Mexico to control the disease.

As of March 21, 1995, Mexico has reported that 63 premises in 3 Mexican States are affected with HPAI (fig. 2). The State of Queretaro is reported to have 41 infected farms with 22 million birds. Thirteen million broilers in three major poultry companies in Queretaro have been depopulated since early March 1995. The State of Jalisco is reported to have 13 infected premises with 5 million birds, and the State of Puebla is reported to have 9 affected premises with 3 million birds.

As of March 21, 1995, 20 Mexican States have positive serology for avian influenza (fig. 3). Two of these States, Nuevo Leon and Tamaulipas, border the United States. The rest of the States with positive serology are located in southern and central Mexico.

Figure 2

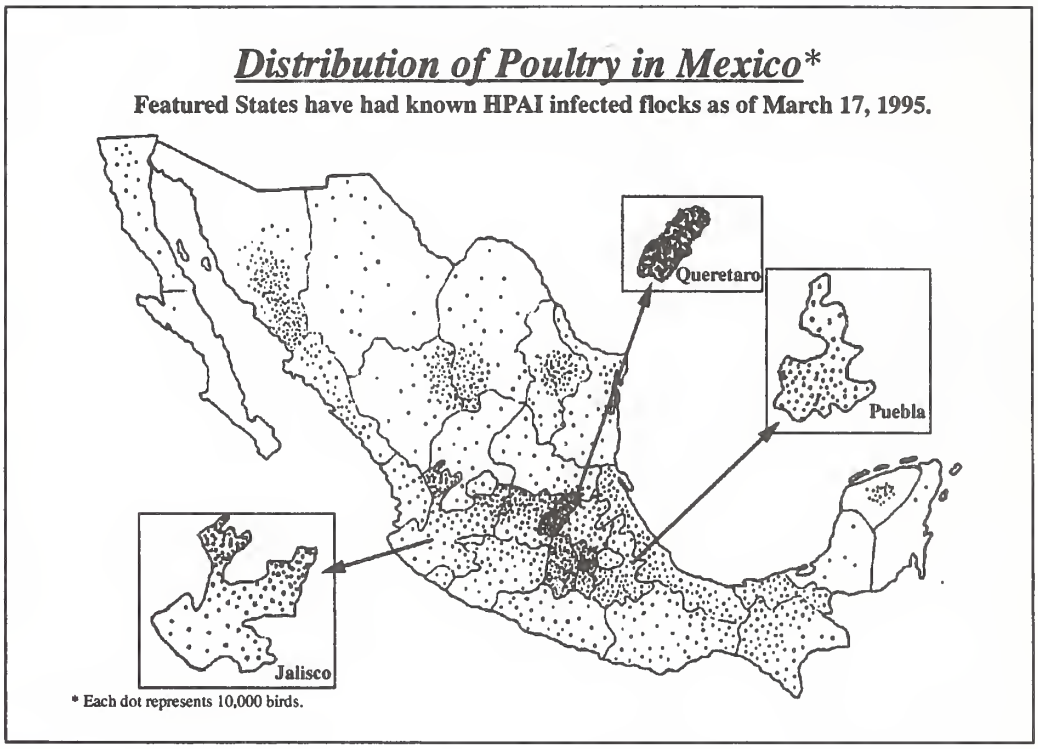
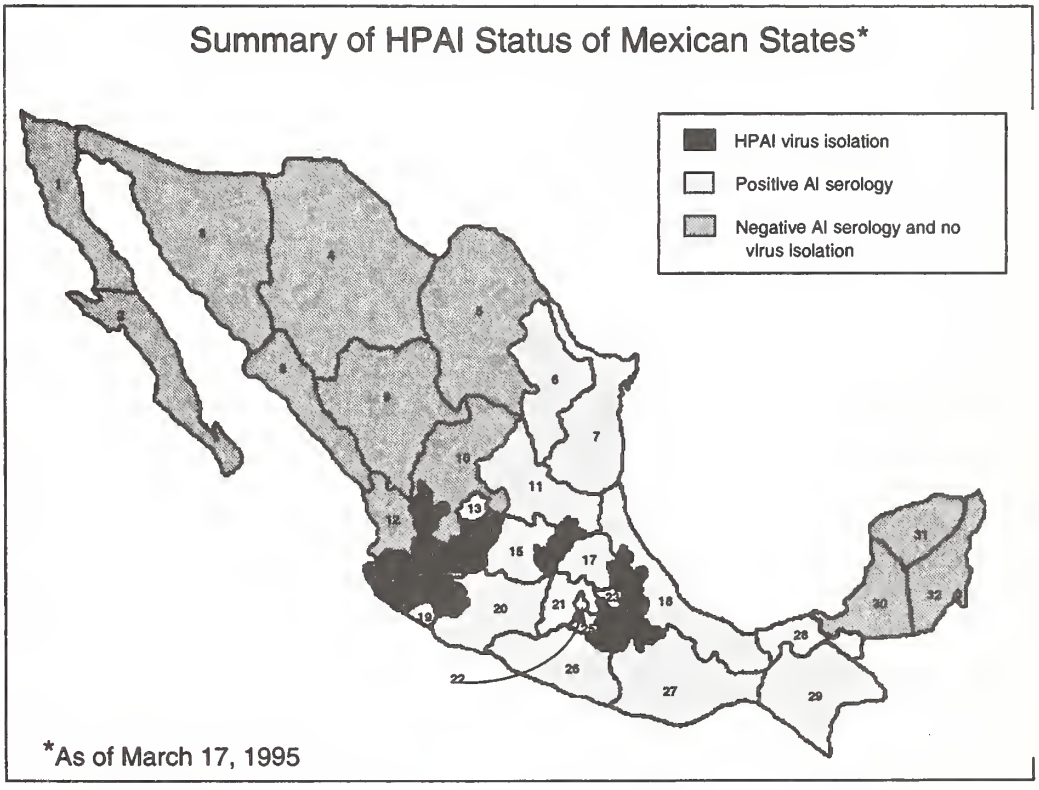


Figure 3



1. Baja California Norte
2. Baja California Sur
3. Sonora
4. Chihuahua
5. Coahuila
6. Nuevo Leon
7. Tamaulipas
8. Sinaloa
9. Durango
10. Zacatecas
11. San Luis Potosi
12. Nayarit
13. Aguascalientes
14. Jalisco
15. Guanajuato
16. Queretaro
17. Hidalgo
18. Veracruz
19. Colima
20. Michoacan
21. Mexico
22. Distrito Federal
23. Tlaxcala
24. Puebla
25. Morelos
26. Guerrero
27. Oaxaca
28. Tabasco
29. Chiapas
30. Campeche
31. Yucatan
32. Quintana Roo

The Mexican Government intends to eradicate HPAI by surveillance, quarantine, vaccination, and voluntary depopulation (no indemnity funds are available). Vaccine is being produced locally in five approved laboratories, which have been provided with a uniform master seed virus by the Mexican Government.

Actions Taken by APHIS. In response to the outbreak, APHIS sent a team to Mexico, upon invitation from Mexican animal health authorities, to review their HPAI control and eradication program. In addition, APHIS formed an AI Advisory Group to further assess the situation in Mexico and to review APHIS policies regarding AI. The purpose of the advisory group is (1) to evaluate the situation in Mexico, (2) to develop a plan to reduce the risk of spread of HPAI from Mexico to the United States, (3) to review the emergency response plan in the event of diagnosing HPAI in the United States, and (4) to reevaluate APHIS' policies on control and eradication of AI.

In late March and early April 1995, APHIS, in cooperation with the U.S. Animal Health Association, hosted a series of meetings across the country between Federal, State, and poultry industry representatives. The purpose of these meetings was to apprise industry of the situation in Mexico, to present APHIS' plans for reducing the risk of spreading HPAI to the United States, and to provide a forum for discussion and concerns about AI.

APHIS' Policies. At the present time, APHIS' policy is to get involved if an outbreak of AI is determined to be caused by a **highly pathogenic** strain. If an AI virus is determined to be **nonpathogenic,** APHIS will support State and poultry industry efforts to control circulation of the virus through enhanced surveillance and, if necessary, by providing technical assistance. In the event of an incursion of HPAI, APHIS policy is to eradicate the disease through quarantine, depopulation, and possible indemnification of flock owners.

At the present time, APHIS has not changed its position on vaccination. APHIS does not recommend vaccination for AI because vaccination would interfere with effective control and eradication of the disease.

245

Economic Impact of 1983–84 Outbreak of Highly Pathogenic Avian Influenza in the United States—Comparison With 1995 Dollars

An outbreak of HPAI within the United States could have serious economic consequences. The last outbreak of HPAI in the United States occurred in 1983–84. Adjusted for inflation, losses to producers and consumers resulting from the 1983–84 outbreak would equal approximately $85 million and $490 million, respectively, in today's dollars. The economic impact of an outbreak of HPAI within the United States in 1995 would depend upon such factors as (1) whether commercial production was affected, (2) where the outbreak took place, (3) how widespread the outbreak became, and (4) what trade restrictions were imposed by foreign governments.

The 1983–84 Outbreak. The 1983–84 AI outbreak occurred in Maryland, New Jersey, Pennsylvania, and Virginia. At the time of the outbreak, approximately 4,600 farms within the quarantine area were associated with poultry production. Inventories on these farms included approximately 16 million hens or pullets, 26 million broilers, and 4 million turkeys. Poultry sales from these farms equaled approximately 4 percent of total U.S. broiler sales and 7 percent of total U.S. sales of turkeys.

To eradicate the disease, restrictions were placed on movements of poultry and poultry-related items, and nearly 17 million birds were depopulated. Producers

incurred losses resulting from (1) depopulation, (2) destruction of materials, (3) cleaning and disinfection costs, (4) downtime, and (5) diversion of production from normal marketing channels, i.e., breeder birds sent to slaughter. Total producer losses, when adjusted for inflation, would equal approximately $85 million today.

U.S. consumers faced increased prices for poultry products and other meat items. The poultry meat supply was estimated to have been reduced by 62 million pounds, and the egg supply, by 23 million dozen. Adjusted for inflation, the extra spending incurred by U.S. consumers in 1983–84 would equal approximately $490 million today.

APHIS spent more than $60 million from November 1983 to August 1984 on the eradication program. Adjusted for inflation, these eradication costs would equal approximately $85 million today. Indemnity payments accounted for almost 70 percent of APHIS expenditures. The remaining 30 percent was spent on salaries, travel, supplies, and equipment.

(Carol Tuszynski, Economist, Centers for Epidemiology and Animal Health, VS, APHIS, USDA, 555 South Howes, Fort Collins, CO 80521, 303–490–7893)

245

Malignant Catarrhal Fever—Case Studies of Foreign Animal Disease Investigations

Malignant catarrhal fever (MCF) is a multisystemic, usually fatal viral disease of importance because it may mimic a variety of other exotic and domestic diseases. Clinical MCF must be distinguished from other diseases that produce inflammation, erosions, and ulcerations of the nasal and alimentary tract mucosa, such as bovine viral diarrhea–mucosal disease, bluetongue, rinderpest, vesicular diseases (foot-and-mouth disease and vesicular stomatitis), ingested caustics, and some poisonous plants and mycotoxins.

The etiology of most MCF throughout the world is still unknown. The disease affects cattle, buffalo, American bison, and deer of several species. In the United States, MCF is commonly divided into two types, domestic and exotic.

The exotic form of MCF is thought to be transmitted to cattle by wildebeests, hartebeests, and similar reservoirs at the time of calving. A herpesvirus, alcelaphine herpesvirus (AHV–1), has been repeatedly isolated in cases of exotic MCF.

Domestic MCF appears to be associated with exposure to parturient sheep, although cases have occurred in cattle after exposure to rams. Herpesviruses similar to AHV–1 have been isolated from cattle affected with domestic MCF.

In the past few years, several cases of domestic malignant catarrhal fever have been diagnosed in New Jersey in cattle, bison, and captive white-tailed deer. The cases presented in this article were investigated by APHIS, VS, to rule out the possibility of a foreign animal disease. In addition, the cases illustrate that MCF can present different clinical syndromes depending on the species infected.

Case 1: Ataxia and Oral Lesions in a Holstein Heifer

History. APHIS, VS, was contacted by a private veterinary practitioner after he examined a cow with oral and muzzle vesicles and erosions. The cow was a well-vaccinated 2-year-old Holstein heifer that had been on the farm for 6 months. The farm had 124 other dairy cattle and a few geese. Calves were not raised on the farm. There was no history of foreign travel for anyone associated with the cattle.

The owner had noticed the cow was "off color," and within 24 hours she seemed disoriented. The cow separated herself from the herd and seemed to wander when they tried to get her into the barn. The owner called the private practitioner to examine her, and he noted bloody nasal discharge, ataxia, diffuse corneal edema, oral erosions, and blunting of the buccal papillae. Whole blood and serum were collected. The next day the cow was down but feisty. She died the following day, 4 days after the onset of signs.

A VS foreign animal disease diagnostician arrived at the farm shortly after the cow died. Examination of the pastures and other cattle revealed the following: (1) few weeds in the pasture, (2) no toxic plants noted, (3) a small stream running through the pasture, (4) fenceline contact with sheep, and (5) one cow with unilateral epistaxis. The owner reported frequently seeing wild deer in the pasture, and a dead raccoon was seen in the pasture near the road. Raccoon rabies is endemic in New Jersey.

Necropsy. Extensive, undermined erosions of upper and lower lips; blunting of the buccal papillae; perirenal hemorrhage; perihylar congestion; petechia at atlanto-occipital junction.

Samples. Samples (half placed on ice, half placed in formalin) were taken from the brain, mesenteric lymph nodes, kidney, spleen, and liver. Blood and serum samples previously collected by the private practitioner were sent along with the tissue specimens to NVSL. Half of the brain was submitted to the New Jersey Department of Health Laboratory for rabies testing.

Differential Diagnosis. MCF, pseudocowpox, herpes mammillitis, listeriosis, rabies, and BSE.

Laboratory Results. Histopathologic lesions were consistent with a diagnosis of MCF. Serology for MCF was negative, with serum neutralization at 1:4 but immunoperoxidase test (IPT) positive at 1:100. (The IPT test is more sensitive for MCF.) Virus was not isolated from any of the tissues.

Discussion. This case demonstrates the acute or "head-and-eye" form of MCF. Neurologic signs are not frequently seen with MCF but may be manifested by trembling, ataxia, and terminal nystagmus.

Most cases of domestic MCF in cattle have a low morbidity (one or two animals in a herd) with a high mortality. No other cattle in this herd died, and the cow exhibiting epistaxis was normal the following day.

Domestic MCF can be contracted via exposure to sheep or infected deer. Deer with MCF usually die, while sheep are unaffected. The owner was advised to prevent fenceline contact with the neighbor's sheep and to contact APHIS' Animal Damage Control division for assistance in limiting contact between his cattle and deer.

Case 2: Holstein Pastured With Sheep

History. A private practitioner contacted the New Jersey Division of Animal Health after examining a Holstein cow with scabbing lesions on the nose, teats, vulva, and mouth. The cow was disoriented and febrile (106 °F) and had conjunctivitis. Serology provided a diagnosis of MCF.

The cattle on the farm were pastured with sheep during the lambing season. All other cattle and all sheep were clinically normal.

Laboratory Results. A VS foreign animal disease diagnostician went to the farm to collect serum from the sheep for MCF testing. Fifty-five sheep were tested with the following results: (1) 18 sheep IPT positive at 1:100, (2) 33 sheep IPT positive at 1:20, and (3) 4 sheep IPT negative.

The four negative sheep were new additions to the farm and had been housed separately. Sheep IPT positive at 1:100 are considered to have been exposed to MCF. The significance of an IPT titer of 1:20 is not known.

Discussion. As a result of this case, VS personnel surveyed 50 sheep at a livestock auction and 17 sheep at a custom-kill slaughter plant in New Jersey. The purpose of the survey was to determine if exposure to MCF was common in sheep in New Jersey. Results of the survey were as follows: (1) at the livestock auction, 5 sheep IPT positive at 1:20, 44 sheep IPT positive at 1:100, 1 sheep IPT negative, and (2) at the custom-kill plant, 6 sheep IPT positive at 1:20, 4 sheep IPT positive at 1:100, and 7 sheep IPT negative. These results suggest that many sheep in New Jersey may be seropositive for MCF.

Case 3: Lame Bison

History. A 3-year-old male bison at a small zoo in northern New Jersey was exhibiting corneal edema, hind limb lameness, and weight loss. The zoo veterinarian contacted VS for assistance, as the zoo had previously experienced other animal deaths.

MCF had been suspected at the zoo 4 years previously. A mouflon goat had been added to the zoo from another zoo that had a history of domestic MCF. The bison pen was next to the domestic sheep pen, and the two species had fenceline contact. A pen for elk was next to the bison corral. The zoo had experienced two elk stillbirths, and two adult elk had died. Nearby yaks also had experienced stillborn calves for the past 3 years.

Laboratory Results. Serum from the bison was positive for MCF using immunofluorescence assay (IFA). Serum from the sheep was IFA negative for MCF.

Discussion. The bison died within a week of developing clinical signs. MCF is usually fatal in bison. This case illustrates the subtlety of clinical signs of MCF in exotic species.

Case 4: Sporadic Deaths in Captive White-Tailed Deer Herd

History. A research herd of 26 white-tailed deer had experienced 12 deaths over the past 3 years. Assistance was requested of VS when necropsy of a dead deer revealed generalized lymphadenopathy. The deer had not been off color and had died suddenly.

Necropsy Results. Generalized, marked lymphadenopathy; abrasion and ulceration of the muzzle; diffuse, multifocal nodules (white with surrounding dark, consolidated areas) found in lungs, liver, kidneys, spleen, cardiac muscle, and on the heart valves; yellow pericardial effusion; large ball of fiber in the rumen (from eating plastic tarp); hemorrhagic cecal mucosa; hyperemic, hemorrhagic bowel.

Samples. Samples were collected of all tissues with gross lesions and were placed both on ice and in formalin. Serum previously collected and frozen was also sent to NVSL and to the Foreign Animal Disease Diagnostic Laboratory, Greenport, NY.

Differential Diagnosis. MCF, tuberculosis, or lymphosarcoma.

Diagnosis. Histopathology was consistent with MCF.

Discussion. Necropsy lesions seen in this deer are typical for MCF in this species. In this case, personnel working with the deer also work with sheep, sometimes moving directly from one species to the other.

MCF is usually fatal for deer. In 1990, an epizootic of MCF in white-tailed deer occurred at a small petting zoo in New Jersey. In the epidemic, 23 of 28 deer died in a 4-month period. Clinical signs prior to death were minimal (depression, central nervous system disorders, or watery diarrhea); death was sudden. Necropsy lesions in the 1990 epizootic included blood-tinged intestinal contents, congested and edematous lungs, petechial hemorrhages on serosa of intestine and spleen, multifocal necrotic foci in liver and heart, and moderate enlargement of the lymph nodes.

MCF in deer and antelope tends to be quite different clinically from the disease in cattle. Death may be sudden after a brief course of hemorrhagic diarrhea. Clinically, MCF may resemble hemorrhagic disease caused by either epizootic hemorrhagic disease virus or bluetongue virus.

(Dr. Leslie L. Bulaga, VS, APHIS, USDA, 2333 Whitehorse–Mercerville Road, Trenton, NJ 08619, 609–989–2255)

As of February 1995, USDA, APHIS headquarters moved to new facilities. Questions about the Foreign Animal Disease Report may be sent to:
Dr. Sara Kaman, Editor
USDA, APHIS, VS, Emergency Programs
4700 River Road, Unit 41
Riverdale, MD 20737–1231

Readers wishing to contact VS or other APHIS officials previously based in Hyattsville, MD, may do so by dialing (301) 734– plus the original last four digits of their telephone number. Emergency Programs' new telephone number is (301) 734–8073.

Thirty days before moving, send address change and, if possible, mailing label from latest issue to:

Distribution Management Section
USDA, APHIS, MSD, PDMB
4700 River Road, Unit 1
Riverdale, MD 20737–1229